

Content-area teachers and scaffolded instruction for English language learners

Faridah Pawan*

Indiana University, Language Education, Wright Education Building, 201 North Rose Avenue, Room 3030, Bloomington, IN 47405, USA

Received 20 April 2006; received in revised form 27 January 2008; accepted 7 February 2008

Abstract

Scaffolding provides content-area teachers (CATs) with an effective means to integrate language instruction into content-area instruction for English language learners (ELLs). Data for this study were derived from 33 CAT discussions while they were pursuing professional development in an American university classroom over 32 weeks. The discussions yielded 408 scaffolding statements that were coded and analyzed. The findings identified linguistic, conceptual, social and cultural scaffolding as part of the CATs' personal practical knowledge. Also, the findings demonstrated that CATs' knowledge of cultural scaffolding is limited in comparison to other scaffolding strategies. The findings have an impact on the nature of ELL instruction and its effectiveness.

© 2008 Elsevier Ltd. All rights reserved.

Keywords: Scaffolding; English language learners; Content-area teachers; Content-based language instruction; Teacher personal practical knowledge; Cultural scaffolding

1. Introduction

Research on approaches to instruction for English language learners (ELLs) indicates that integrating *content* into language instruction introduces an authentic academic challenge to learners via its demand for higher order thinking skills (Snow, 1998). In addition to accelerating English Language learning (Bunch, Abram, Lotan, & Valdes, 2001; Dong, 2002), the authenticity of the challenge inherent in the approach sustains intellectual progress and provides motivation to succeed. Analyses of several studies (Arhar, 1997; National Association for Core Curriculum, 2000; Vars, 1996) point to

the same general conclusion: students in any type of interdisciplinary or integrative curriculum do as well as, and often better than, students in a conventional compartmentalized program.

Scaffolding is an approach that provides teachers an effective means to integrate ELL instruction into content-area instruction and to enable ELLs to demonstrate their knowledge without complete reliance on language. Effective scaffolding is thus a critical element of the knowledge base of all teachers who have ELLs in their charge. Content-based language instruction and scaffolded instruction for ELLs is a timely subject in the United States (US) given the 65.03% growth in ELL enrollment growth over the last 10 years in kindergarten to secondary (K-12) schools in the US (US Department of Education, 2006). Additionally, 77% of

*Tel.: +1 812 856 8274; fax: +1 812 856 8287.

E-mail address: fpawan@indiana.edu

content-area teachers (CATs) report lacking preparation of any kind in working with ELLs (National Centre for Educational Statistics, 2002). Given their direct involvement with ELLs, and the fact that the latter spend 80% of their school day with CATs (Dong, 2002), it is thus important to understand CATs' practical knowledge or knowledge in the practice of scaffolding instruction for ELLs.

Research on scaffolding has primarily focused on the impact on learning of various scaffolding strategies and applications. Current research on scaffolding, however, lacks data on teachers' knowledge of scaffolding strategies. These data are essential for identifying those areas of pedagogy that should be reinforced or added to teacher education programs.

The purpose of this study is to identify major types of scaffolding recognized by CATs in the US as well as a significant variation and emphasis in teachers' practical knowledge (TPK) of scaffolding strategies. The research questions for the study are thus as follows:

- a. Do CATs perceive, as effective, scaffolding practices for ELLs in the learning of academic content areas or subject matter in English?
- b. What scaffolding categories do these practices fall under?
- c. In what ways do these categories inform us about how CATs' ELL instruction can be supported and reinforced?

1.1. Theoretical framework

1.1.1. Scaffolding as practical knowledge of teachers

Shulman (1986, p. 9) conceptualized teachers' pedagogical content knowledge (PCK) as the intersection between teachers' knowledge of their specific subject area and the ways of representing and formulating the subject in a way that makes it comprehensible to others. Scaffolding is a pedagogical component of PCK and thus that of teachers' practical knowledge (TPK) of how to teach how to teach. TPK arises out of prior experiences including teacher education, life experiences, interaction with colleagues and students, perceived values and constraints operating within the school and classroom environment, as well as teacher interpretations of the particular circumstances encountered in classroom situations. The current study focuses on an aspect of teacher knowledge involving CATs'

knowledge of scaffolding, what this constitutes and what is prioritized by teachers when the instruction of ELLs is concerned.

1.1.2. Types of scaffolding

Vygotsky (1978) defines "scaffolding" as the social interaction between experts and novices during which the former engage in supportive behaviors and create supportive environments for novices to acquire skills and knowledge at a higher competency level. Nevertheless, the concept of "scaffolding" has evolved from learning support and assistance at the interpersonal level to one that includes the use of a multitude of tools, guides and resources (Brush & Saye, 2001). Studies at the interpersonal level include Ulanoff and Pucci (1999), Nassaji and Cumming (2000), and Mohan and Beckett (2003). The common thread in all these studies is the effect of expert assistance on language learners. For example, Ulanoff and Pucci (1999) looked at teachers' use of the concurrent translation and preview–review approaches amongst 60 bilingual elementary students (third graders) in Los Angeles and found that the preview–review approach contributed to the highest scores in vocabulary tests.

Peers and/or equal non-experts (Antón, 1999) are also included in scaffolding studies focusing on interpersonal interactions. Ewald (2005) argues that peer interactions proceeded naturally even without the attainment of a good common grade (positive interdependence) as motivation. de Guerrero and Villamil (2000) undertook a study of scaffolding mechanisms used during interactions between two male college English-as-a-second-language (ESL) learners engaged in writing revisions. Results indicated the importance of the peer reader to mediate learning; the establishment and maintenance of a feeling of intersubjectivity and shared focus between the reader and the writer; and the consequent assumption of independent action and learning on the part of the peer writer. A related aspect of peer-to-peer scaffolding is its multidimensionality and fluidity. Cumming-Potvin, Renshaw, and van Kraayenoord (2003), for example, stress that scaffolding has been inadequately conceived as a linear process of providing and removing learning support for learners. They argue for a multi-tiered notion of scaffolding involving the dynamic interplay and interactions between members in a group working together, whereby the

boundaries between expert and novices are blurred and interchangeable.

Cultural scaffolding is exemplified by scholarly works in the early and mid 1990s on “primary and secondary discourses” (Gee, 2000), “funds of knowledge” (Moll, 1994) and “cultural responsive teaching” by Ladson-Billings (1994). In this respect, current pedagogy strives for the interconnectivity between students’ out-of-school and school experiences that provides a means for students to enter into “an intellectual partnership or at least be greatly helped by cultural artefacts in the form of tools and information resources” (Salomon & Perkins, 1998, p. 5) culturally and historically familiar to them (Gee, 2000; Street, 2005). Cultural scaffolding defines a pedagogical approach, which, according to Salomon and Perkins (1998), involves the manipulation of “cultural tools.” The authors explain that these tools range from information sources to socially shared symbol systems that are culturally and historically situated. The tools form the basis for learning systems, action reorganization and the determination of what can be carried out (p. 5). From an instructional perspective, this means that the use of cultural referents is central in imparting knowledge, skills and attitudes (Ladson-Billings, 1994, p. 18). If undertaken well, this pedagogical approach will result in “culturally responsive” teaching whereby students’ cultural differences in backgrounds, knowledge base and experiences are used as conduits to teach them more effectively (Gay, 2002).

Virginia Collier’s “Prism Model” that emerged from a study on factors for school effectiveness for language minority students (LMS) (Thomas & Collier, 2002) specifically contributed to the types of scaffolding most relevant to ELLs. The research involved a macroscopic study of the impact of instructional strategies on LMS long-term achievement that was undertaken by five large school districts (700,000 students). The utility of the model stems from its ability to identify and demonstrate the interdependency of four factors, namely linguistic, academic, cognitive and socio-cultural support, in helping ELLs to succeed. Linguistic factors cover all aspects of language development support including formal, informal, conscious and sub-conscious aspects of the acquisition and learning of oral as well as written language skills in students’ first and second languages. Academic and cognitive factors, on the other hand, involve sustaining conceptual and intellectual support in school work and through

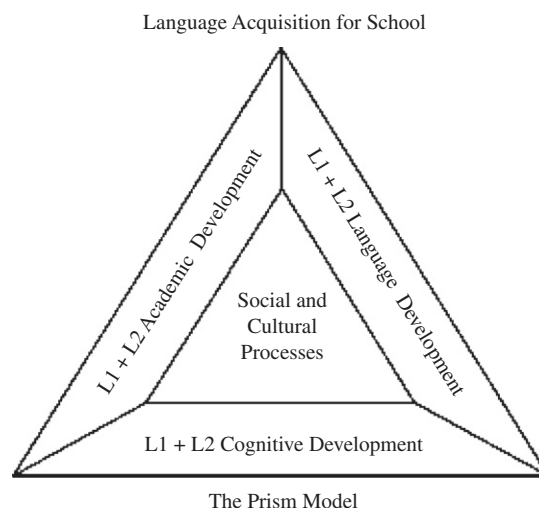


Fig. 1. Prism Model (copied with permission).

the use of students’ “first language at least through the elementary school years” (p. 43). Finally, socio-cultural factors include the facility given to students to incorporate into their school learning experiences, their past, present and future experiences at home, in school, in their community and in the broader society. The importance of these four factors provides the rationale for the use of the Prism Model as the basis for coding in our study (Fig. 1).

As can be seen from the review above, research on scaffolding has focused on investigations on the impact of scaffolding on student learning. Interest in cultural scaffolding, in particular, has emerged from efforts to expand the conceptions of literacy and to engage in culturally relevant and meaningful teaching, given the diversity of students in the American public school systems. This study takes a different turn and investigates practical knowledge of scaffolding among CATs who work with ELLs. The findings from this paper will demonstrate that CATs’ pedagogical knowledge of cultural scaffolding in ELL instruction is significantly overshadowed by their knowledge of conceptual, linguistic and social scaffolding.

2. Methodology

2.1. The research setting

The research was conducted in 2004–2005 with CAT participants in the Collaborative Teaching

Table 1
Participant characteristics

Teacher role	Male	Female	Years teaching	Elementary school	Middle school	High school	Adult education	Total number of participants
Content Area	7	26	5–20	15 All subjects	6 Lang Arts, Math, Science	11 Math, Science, Health/ Physical Ed, Art, Journalism, History	1 Remedial Ed, GED	33

Institute (CTI).¹ The main thrust behind the program is that ELLs are not just the responsibility of English-as-a-second-language teachers (ESLTs) but also the responsibility of all teachers. Hence, all teachers must undergo teacher education in ELL instruction as language and content instruction cannot be separated (Kaufman & Crandall, 2005). CATs in the program pursue a 9-month, sustained in-service professional program development on ELL instruction through online classes that are supplemented with onsite visits by their instructors and workshop consultants.

The participants in this study were in-service teachers in the 2004–2005 CTI cohort from seven school districts that were identified by the Department of Education in a Midwestern state as districts that are highly impacted by ELL enrollment. The teachers participated in two identical online graduate classes that were taught by the same instructor and specifically designed for CTI participants. The class is student-centered in that members of the class select and choose themes for discussion and engagement. After 2 weeks in which the instructor modelled online engagement by leading and moderating discussions, participants assumed leadership roles in conducting discussion for the remainder of the course.

3. Respondents

The study involved gathering data from 33 CATs in the program. Table 1 provides a profile of the teacher-participants in the study.

The respondents were primarily female teachers and consisted mostly of teachers who have had at least 15 years of classroom teaching experiences though one-third of the teachers had only 5 years of

teaching experiences. Fifteen teachers taught at the elementary level, 11 at the high school level and six were middle school teachers. The elementary school teachers taught all subjects but not ESL. At the middle school level, three teachers taught English language arts, two taught mathematics and one taught science. At the high school level six taught math and science, two taught health and physical education, and the rest of the teachers each specialized in history, art and journalism. One teacher taught adult education whose students needed remedial help to obtain a high school diploma.

3.1. Data for the study

Besides data from a survey at the end of the program, data from the study are primarily derived from textual discussions in an online, asynchronous forum. Hence, the main sources of data were:

- 3734 CATs' online postings on scaffolding across 32 weeks of instruction and
- two teacher surveys (open-ended and Likert) on opportunities and challenges in scaffolding instruction for ELLs.

3.2. Data collection and analyses

There were three phases in the data collection and analyses. In the first phase, daily textual postings and discussions in the asynchronous forum were printed out and analyzed for instances of scaffolding statements. In the second phase, coders used Thomas' and Collier's Prism Model as a basis, to code the statements into scaffolding categories. In the final phase and upon the completion of the coding of the postings, we twice surveyed the participants' opinions on scaffolding in order to contextualize our findings in the previous phases.

¹CTI is a pseudonym.

Phase 1: Three coders analyzed statements from the participants' daily postings and identified 408 (10% of 3734) as those containing information related to scaffolding. The unit of analysis consisted of a segment of words—most often a sentence (declarative or interrogative) or a paragraph of each posting; 298 such statements alluded to various means for assisting and helping students to keep up with content-area instruction and 110 were statements that mentioned scaffolding in particular.

An example of each is included below:

Implied statements on scaffolding:

I realize that I need to do more than just rewrite the assignments; I need to alter my delivery and use supportive material as well, so students are both learning the content and being given opportunities to practice language.

Direct mention of scaffolding:

It does help to speak the child's language but it is not a requirement for getting licensed in ESL here. What is more beneficial is how you teach. It needs to be hands-on, interactive, etc. This is scaffolding, right?

The coders undertook "check-coding" (Miles and Huberman, 1984) whereby they coded separately and later reviewed the data together. There was 93% inter-rater reliability for the three coders based on the number of agreements over the total number of agreements and disagreements.

Phase 2: As noted previously, we utilized the language acquisition factors in ELL success identified in Collier's Prism Model (Thomas & Collier, 2002) as a basis for our coding. We undertook an initial coding of 104 messages using the model. The initial coding led us to the following modifications of the model:

- a. *Linguistic scaffolding:* Simplifying the English language, for example, by shortening selections, speaking in the present tense, avoiding the use of idioms, etc.
- b. *Conceptual scaffolding:* Providing students with supportive frameworks for meaning by providing organizational charts, metaphors, etc.
- c. *Social scaffolding:* Using social interaction to support and mediate learning (e.g. group work).
- d. *Cultural scaffolding:* Using artifacts, tools and informational sources that are culturally and historically situated within a domain familiar to learners.

Our modifications of the Prism Model (see Table 2) included the following:

1. We specified that in linguistic scaffolding, the language to be scaffolded is English in order to apply more specifically to the place where the study was undertaken, i.e. where state law establishes that English is the official medium of instruction.
2. We collapsed the "academic" and "cognitive" factors into a single category of conceptual scaffolding. In both factors, the use and acknowledgement of students' first language to access schoolwork and to demonstrate existing knowledge are central in Thomas' and Collier's model. Hannafin, Land, and Oliver (1999) capture the essence of those factors at the macro level in their definition of "conceptual scaffolding" as the incorporation of various possible tools, methods or informative elaborations to achieve and share understanding.
3. We separated the socio-cultural factor into two scaffolding categories. We found the two categories (social and cultural) necessary as students' engagement in classroom social activities that were developed to support learning are not necessarily related to ELLs' cultural heritage. For example, students are put into social dyads as conversation partners for the completion of an activity rather than as a means to put them in a culturally familiar context. The following quotes are illustrative:
 - Group work and social scaffolding: I also set up group work as I have also found that students do help each other out. And what better way to learn than to teach it yourself. I have found while going from group to group as the year progressed, students tend to feel more open to get involved in the discussions, or even sometimes start discussions.
 - Group work and cultural scaffolding: Even though it may seem like my beginning level 1 student could get lost in the task, she has begun to open up when I put her with one or two friends who speak Spanish. She has been very quiet, yet when she has her group's support, she has been more willing to share and to participate.

Using the modified coding scheme, the inter-rater reliability rate for this coding phase was at 95%.

Phase 3: We administered two survey forms to students. The first was a set of two open-ended

Table 2
Scaffolding types

<i>Linguistic:</i> Simplifying and making the “English” language more accessible		<i>Conceptual:</i> Providing supportive frameworks for meaning, providing organizational charts, metaphors, etc.	<i>Social–cultural:</i> Mediating and situating students’ learning in a social context involving the engagement and support of others (expert and novice, peer and peer (social). Also using artifacts, tools and informational sources that are specifically culturally and historically situated within a domain familiar to learners (cultural)	
			Social	Cultural
<ul style="list-style-type: none">● Free journalling● Prewriting● Oral presentation of materials● Reading out loud^a● Conversational mode in lesson delivery● Written instructions● Simplified language● Slowed pacing^a● Direct instruction of form and meaning● Direct instruction of form● Vocabulary teaching● Reading instruction	<ul style="list-style-type: none">● Modelling^a● Show instead of explain^a● Body language^a● Think-alouds● Structured step and choices^a● Pre-teaching difficult concepts● Frequent practice test sessions● Bookmarking relevant websites● Explicit connections between in class and out of class experiences (life experiences)● Explicit/transparent expectations● Sourcebooks● Condensed material● Computers● Realia/authentic artifacts● Visuals^a● Charts● Checklists● Posters● Pictures● Simulation● Experiments● Games	<ul style="list-style-type: none">● Teacher: one-to-one assistance and encouragement^a● Pairing ELLs with NS● Combination of individual and group work● Peer-coaching on assignments● Specific role assignment in small groups	<ul style="list-style-type: none">● Students’ prior knowledge● Literature from students’ culture● Students’ learning styles● L1 peer work● Spanish-speaking teacher colleagues for translation and instruction	
Total: 21.6%	Total: 47.2%	Total: 23.4% (Social)	Total: 6.3% (Cultural)	Total postings: 408 (298 + 110)

^aIdentified also as special education strategies.

survey questions that we shared during onsite visits with the teachers in their schools in the middle of the program, after they had been in the program for 4 months (Table 3). Then by focusing on the most frequently occurring themes, we developed a set of Likert scale survey questions (Table 4) and distributed the survey in the face-to-face weekend retreat in July at the end of the program. We then tallied the percentages of agreement of responses for each item, i.e. numbers 4 and 5 on the Likert scale.

4. Findings

4.1. Posting analyses

From the 408 postings analyzed, the majority of statements (47.2%) consisted of references to

conceptual scaffolding. Linguistic and social scaffolding both received relatively equal attention at 21.6% and 23.4%, respectively. References to cultural scaffolding, however, occurred in only 6.3% of the statements in the sample (Table 2).

Conceptual scaffolding is multi-faceted and a combination of teacher-initiated and student-centered activities. Teacher-initiated activities include teacher modelling, “showing instead of explaining”, teachers using body language and total physical response, and think-alouds. The scaffolding also includes “direct teaching” involving teachers structuring choices for students, pre-teaching difficult concepts, practicing tests with students, pre-selecting websites, demonstrating explicit in- and out-of-school connections to a topic, and explicitly stating expectations. Scaffolding in this category

also includes many other assistive elements such as teachers' use of supplementary materials including source books, "condensed texts," computer and multi-media resources, artifacts from real life or realia and visuals (e.g. posters). Simulations, experiments and games either on the computer or live in the classroom are also among those mentioned as part of student-centered conceptual scaffolding.

Below is a quote that illustrates conceptual scaffolding. In addition, the quote also illustrates a common position that the field works hard to overcome, that is, good teaching of ELLs is equivalent to good teaching for all students (see Harper & de Jong, 2004).

As I read the author's examples (pre-teaching, giving real-life examples, etc.) I was thinking that I have done all of those things over the course of my teaching career, but I never considered it sheltered instruction, or scaffolding, or whatever. I just considered it common sense and good teaching. Are we all looking for magic bullets that we (as good teachers) already possess?

Linguistic scaffolding refers to making the English language accessible by situating it within a personal realm (free journalling), in a process (prewriting) and expanding literacy as a multi-modal practice (oral presentations of material, reading out loud, using a conversational delivery mode and writing down instructions). Direct teaching involves form- and meaning-based instruction, as well as the teaching of vocabulary and reading skills. Simplifying language and slowing down speech are also part of CATs' efforts to assist ELLs linguistically. The following quote illustrates a few of the scaffolding strategies as well as a caution that unless ELLs' developmental stages are clearly understood, their learning struggles could be mislabelled as a learning disability:

This year for the first time I had ELLs mixed in with Native English speakers, but still continued with the Julius Caesar activity (this is where I first began to wish that my ELLs were mixed in with non-learning disabled students). I modelled reading for them but slowed down my reading. My level 3 students and a few of my level 2 students did a good job; my level 1 students struggled and I had to modify by allowing them more time for them to read to me directly rather than have the whole class staring at them.

Table 3
Open-ended survey questions

- a. Enclosed are 2–5 sentence reflections about a current scaffolding practice related to ELLs that I undertake. (Indicate the practice, reflections and other additional comments.)

- b. Enclosed are 2–5 sentence reflections about a current belief I hold about scaffolding. (Indicate the belief, reflections and other additional comments.)

Table 4
Survey items and response percentages

Survey items	% of strong agreement (4 and 5)
i. Scaffolding is important for all students and not just ELLs. Disagree 1–2–3–4–5 Strongly agree	52.6 out of 100%
ii. Collaboration with ESLTs is essential in ELL scaffolding instruction Disagree 1–2–3–4–5 Strongly agree	38.5 out of 100%
iii. Scaffolding for ELLs is the responsibility of all teachers Disagree 1–2–3–4–5 Strongly agree	19.2 out of 100%
iv. Scaffolding training is needed Disagree 1–2–3–4–5 Strongly agree	9.4 out of 100%
v. Scaffolding for ELLs is difficult Disagree 1–2–3–4–5 Strongly agree	7.6 out of 100%
vi. ELLs' cultural background is essential in scaffolding content area instruction Disagree 1–2–3–4–5 Strongly agree	2.5 out of 100%

Engagement of students in a social and non-structured setting with teachers and peers consisted of 23.4% of activities that were categorized under social scaffolding. There is individualized learning

(Merrill, Reiser, Merrill, & Landes, 1995) whereby students work with teachers during which time there is one-to-one assistance and encouragement from teachers. Peer learning (Blumenfeld, Marx, Soloway, & Krajcik, 1996) is undertaken by virtue of the flexible grouping of students in dyads, small groups and a combination of individual and group work. Groupings of students with specified tasks (peer coaching, collaboration via specific roles to complete tasks) are also evident. In terms of ELLs, CATs have placed ELLs in dyads and small groups with native speakers (NS) and non-native speakers (NNS) of English. Below is a quote illustrating a particular type of peer group work as part of a social scaffolding approach:

It has been very difficult for me to adapt my curriculum to meet the needs of my ESL students. Recently I have had students that are in Upper level Spanish classes work with the ESL students or translate assignments into Spanish.

When participants reported grouping ELLs with other NNS with similar linguistic (L1) and cultural backgrounds, the grouping was categorized under “cultural scaffolding.”

Cultural scaffolding is the use of artifacts, tools and informational sources that are culturally and historically situated within a domain familiar to students. A total of 6.3% of statements in the discussions called for helping students make connections between the target content-area knowledge and that gained from home and community experiences. Scaffolding strategies thus included acknowledging and using students’ prior knowledge, literature from the students’ home culture and their different learning styles. As mentioned above, teachers also reported placing ELLs with peer working groups with others who share similar language backgrounds. Finally, CATs also reported collaborating with Spanish-speaking colleagues for assistance in ELL instruction and translation.

Most of our ESL/ELLs could not read even the lowest level books offered in the program, so the librarian got Spanish books in for them. We constantly debate whether or not that is beneficial or not. I also use diaries and as my students write their “Diarios,” or weekly journals in Spanish, they begin writing in “Spanglish.” They write what they know in Spanish, but use English for what they don’t know. The resource teacher helps to translate the Spanish information.

As the quote illustrates, collaboration is also an important component in the work of CATs in supporting their ELLs.

4.2. *Survey analyses*

The open-ended mid-term survey provided us with the most frequently occurring items related to teachers’ scaffolding opinions that we used in the Likert scale survey (see [Tables 3 and 4](#)). In terms of the latter, in [Table 4](#), question 1 is targeted at identifying the importance of scaffolding in terms of the overall responsibility of CATs’ job; questions 2 and 3 targeted collaboration and engagement of all teachers in ELL scaffolded instruction, i.e. central CTI components; questions 4 and 5 focused on the need for training; and question 6 focused on the study’s findings under “cultural scaffolding.” [Table 4](#) shows the survey items and the percentages of agreement responses to each of the items.

Survey findings in this study situate CATs’ scaffolding efforts in a larger context of teachers’ professional world impacting their pedagogical knowledge. Although half (52.6%) of CATs responding to question 1 in [Table 4](#) acknowledge that scaffolding is important for all students and slightly less than half (38.5%) indicated that collaboration with their ESL counterparts are important in scaffolding instruction for ELLs, only 19.2% of those responding to question 3 agree that it is the responsibility of all teachers. Also, only a small percentage (9.4%) indicated that CATs need training in the area, and only 7.6% think that scaffolding is difficult. Finally, only 2.5% report that cultural knowledge is important for scaffolding in the content area.

5. *Discussions and implications*

At the overall level, the data included in this study provide insight into the multi-dimensional and macro aspects of “teaching presence” (Anderson, Rourke, Garrison, & Archer, 2001) that includes performance assistance (Bliss, Askew, & Macrae, 1996) in a combination of teacher design and administration of classroom procedures, learning facilitation and direct instruction. The data provide an indication of what CATs do in the classroom, particularly in instructing and assisting ELLs. At more specific levels, and in addition to demonstrating the frequency and the types of scaffolding undertaken by CATs, the findings of the postings

also demonstrate the opportunities and the challenges the teachers encounter in the instruction of ELLs.

5.1. Findings from postings

5.1.1. Cultural scaffolding

The posting and survey analyses therefore indicate that cultural scaffolding is seldom referenced by CATs and presumably seldom used in the classroom. However, amongst the postings categorized under the category, there were also those such as the use of literature from students' culture (see Table 2) that demonstrated an orientation toward Lee's (2001) "cultural modelling framework" in which supports were developed to lead students to reflect on their prior knowledge and its relevance to the task at hand.

A closer look at the cultural scaffolding items in the postings also suggest efforts to help students bridge the particularities of their experience, knowledge and cultural heritage with elements in their current classroom circumstances. However, it is not evident that scaffolding included interpersonal engagements for the purposes of developing cross-cultural relationships with their students. Effective teaching must include teachers' competency to develop these relationships with their students, the absence of which can hinder students' academic and social progress (Nieto, cited in Burns, Keyes, & Kusimo, 2005). Kramsch (1995) has argued that teaching culture is a social process during which meaning and understanding emerged through social interaction. Taken from this perspective, American public school teachers such as the CTI teachers in this study as well as teachers elsewhere who plan on undertaking cultural scaffolding should see the classroom as a "privileged site of cross-cultural fieldwork" (Kramsch, 1993, p. 29). Through teachers' interpersonal engagements with students and direct communication with them, teachers would have opportunities to listen, watch and interpret students' successes and struggles to achieve meaning as well as to engage with them in their development of a cross-cultural personality, in all its complexities.

Nevertheless, as mentioned earlier in the introduction, a majority of US teachers lack training in working with ELLs, even though nationally almost half (41%) of public school teachers reported instructing limited English proficient students (National Centre for Educational Statistics, 2002, p. 43). In this

study, the teachers' lack of training is reflected amongst the challenges they reported. The following quote is indicative of the situation:

With ESL students, it's hard to tell if they're not making the connections because of learning difficulties, or because of a language deficit, or because of cultural differences. How do you provide ESL students with a link to something in our American real world, when the only real world they know may be a totally different culture? I don't know how to do this...

5.1.2. Social scaffolding

While we separated cultural from social scaffolding, the two are sometimes intertwined in teaching. Teacher postings, on the whole, indicated clearly whether the scaffolding that teachers used was socially or culturally based (see Section 2). Although on the whole, an overview of scaffolding items listed from the posting findings suggests that a majority are teacher-fronted or teacher-led activities, the postings coded under "social scaffolding" show that almost a quarter of the time, teachers are also engaged in student-centered activities, mediated and unmediated by them. On the one hand, the findings support assertions such as those by Cazden's (2001) that teacher talk dominates classroom discourse, but on the other, the findings suggest teachers' use of flexible groupings (one-to-one, peer-to-peer dyads, small groups, etc.) at least some of the time and demonstrate a certain level of awareness of the benefits of differentiated instruction.

5.1.3. Conceptual scaffolding

Analyses of teacher postings indicate that for many of the CATs in the study, teaching strategies involve scaffolding the conceptual understanding of the subject matter being taught. The teachers' postings indicate that they undertake transmediative (Siegel, 1995) and multi-modal approaches to helping students access specialized knowledge. The approaches require that teachers use multiple sign systems to transfer understandings derived from one system to understand another. A social studies teacher in the study explained the utility of the multi-modal approach in her teaching:

Some kids like to talk about what they read, some like to perform as a response, some like to write or draw about what they read, and I like to give them a variety of opportunities to respond and construct their own learning.

It is a scaffolding approach that would be similarly undertaken by effective teachers of all students in all areas, for example, in literacy by means of multi-modal communications (Richards, 2002); music using visual, aural and kinesthetic resources (Hammel, 2003); science education through the explorations of visual, action and linguistic communication (Jewitt, Kress, Ogborn, & Charalampos, 2001); math using manipulatives (Weiss, 2005/2006); and history via engagement in multi-media learning environments (Saye & Brush, 2002).

5.1.4. *Linguistic scaffolding*

CATs also spent time on linguistic scaffolding. Gee (2000) sees literacy as discourse involving ways of using language, of acting and thinking within specified domains. Defined as such, literacy instruction is an inherent element of all instruction. This is evident in the following comment from a CAT:

Teaching US History to Juniors I see that the ESL standards as being very close to what we also work with. Things such as vocabulary, comprehension, reading, writing, listening skills are what we are really teaching all of the students.

Researchers from content-area instruction are in agreement. For example, Akerson (2001) points out that teaching reading, writing and communicating are essential components of teaching scientific inquiry to elementary students. Similarly, Fang (2006) adds that explicit attention to the language of science should be an integral part of science literacy pedagogy. Draper (2002) argues that by engaging students in literacy activities within mathematics instruction keeps students engaged and interested in the subject and more importantly provides them an avenue to access mathematical concepts. These activities include teaching students how to make meanings out of text and sustaining conversations regarding the text. (For additional efforts on the juxtaposition of literacy in content-area instruction, see also Bing and Thomas (2005, chemistry), Bintz and Shelton (2004, social studies), Witherell, (2000, arts) and Panell (2005, computer classroom).)

5.2. *Survey findings*

Survey findings in this study situate CATs' scaffolding efforts in a larger context of teachers' professional world impacting their pedagogical

knowledge. Although half of CATs acknowledge that scaffolding is important for all students, including ELLs, only 19.2% indicate that it is the responsibility of all teachers. On the other hand, less than half (38.5%) of the CATs indicated that collaboration with their ESL teacher counterparts (ESLTs) is necessary in undertaking scaffolded instruction. These findings suggest several interpretations. They include that the CATs do not feel equipped to undertake ELL instruction and thus they rely on ESLTs to provide assistance. Additionally, CATs may feel that they do not share a similar "community of practice" (Wenger, 1998) with ESLTs that engages them jointly in common tasks over an extended period of time and in which they share resources, common practices, background knowledge, beliefs and understandings (Wenger, 1998). Also, unlike their ESLT counterparts, CATs are responsible for mainstream, ELLs, as well as other students with individualized needs. The professional lives of these teachers are thus encumbered with a multitude of standards to be addressed for each set of students, a stressful situation derived from "role overload" (Conley & Woosley, 2000). In this respect, specialized training in scaffolding may be required in order to give teachers options for helping ELLs master content material. For example, Saye and Brush (2002) conceptualized a distinction between "soft and hard" scaffolds. Soft scaffolds involve teachers constantly monitoring and providing timely support to students and thus are generally more associated with intensive, individualized and ongoing attention from teachers. Hard scaffolds, on the other hand, are supports that can be embedded ahead of time in instructional materials (e.g. guiding questions). When computer software is utilized, hard scaffolds can be individually adapted to the level of students' ability and to the difficulty of the task.

Also of note in the data is that only a small percentage (9.4%) indicated that CATs need training in the area, and only 7.6% think that scaffolding is difficult. One possible interpretation of the finding is that the majority of CATs in the study feel that they already know how to scaffold for ELLs and/or currently undertaking the process without additional training. This interpretation could be linked to what is observed across the four scaffolding categories in the survey findings. CATs associated some scaffolding strategies they used with ELLs with those used for special education students; these are marked with an asterisk accompanying items in

Table 2. The following comment illustrates the point:

As others have pointed out, a lot of the approaches are very similar to teaching Special Ed students... Modifying and scaffolding for ELLs is just like modifying for Special Ed. Many of the modifications I make for the special needs students transfer very well for the ESL students.

The association may indicate that for some CATs, ELL scaffolded instruction may not be anything new but similar to what they are already doing for their special education students. Indeed, [Case and Taylor \(2005\)](#) provide another perspective. They found that ESL students are heavily over-represented in special education programs. They point out that one of the reasons for this is that several ELL “developmental processes of acquiring second language skills may resemble signs of learning disabilities” (p. 127). These include articulation disorders in pronunciation, difficulty in understanding and use of negation, word order and mood in syntax, and challenges in the semantics and use of figurative language. Confusion emerges when ELLs’ developmental stages in learning a second language are seen as defining the overall limit of their learning abilities. Clear guidance is essential for CATs in distinguishing natural language learning processes from learning difficulties. More importantly, CATs must be forewarned that if they begin with the assumption that ELLs are in the same category as physically and mentally challenged students; they may be subscribing inadvertently to instructional approaches that underestimate ELL abilities.

Finally, only 2.5% report that cultural knowledge is important for scaffolding in the content area. The finding suggests both lack of training and awareness as to the importance of cultural scaffolding in the context of subject area teaching and confirms the findings on cultural scaffolding described earlier. The situation makes a strong statement regarding the importance of teachers’ cultural knowledge of their students, and in this study, the use of that knowledge to scaffold instruction. The lack of knowledge and the cultural mismatch between teachers and their ethnically diverse students often lead to the latter’s underperformance, a phenomenon well documented in research ([Phuntsog, 1999](#)). For the trend to be reversed, teachers’ cultural knowledge must be seen as a permanent feature of instruction necessary for building meaningfulness and sense-making through effective scaffolding.

6. Conclusions and limitations

This study on the content-area teacher (CAT) knowledge base emerged out of teachers’ daily textual discussions in a classroom that is triangulated with surveys that are open-ended and based on items on a Likert scale. The findings suggest empirically that cultural scaffolding is an element of content-area instruction that requires focused attention by all English Language Learners (ELLs). Similarly, the findings also support other research asserting that literacy instruction is an inherent component of subject matter instruction and that a foundation in literacy instruction needs to be a part of the teacher education experience of all content area teachers, especially those working with ELLs.

Finally, the findings address, to a certain extent, the question as to whether effective ELL instruction is similar to effective instruction for all students, a question CTI’s program consultants and instructors encountered often throughout the program. The answer to this question is both yes and no. Effective ELL teaching is an element of good teaching in general but good teaching for ELLs must also include teachers’ competency to develop cross-cultural relationships with their students. This implication extends beyond the contexts of CTI and American public schools with ELLs. According to [Windschitl \(2002\)](#), “in classrooms where teachers are unaware of students’ interests and life experiences, they not only fail to build on local knowledge but essentially offer ‘disinvitations’ to participate in classroom discourse” (p. 18). [Buzzelli and Johnston \(2002\)](#) remind us that teaching is “fundamentally relational” (p. 8). Taken in that light, teachers’ cultural competency should constitute more than teachers striving for universality or for maintaining the cultural particularities of students ([Kramsch, 1995, p. 92](#)). Rather, cultural competency should also include teachers’ dialogic engagement and relationship building with students. In foreign and second language teaching, this competency is evident in [Kubota’s \(1998, p. 406\)](#) “responsive teaching” and [Prabhu’s \(1990, p. 172\)](#) “teachers’ sense of plausibility”. In both cases, the value of language teaching is not a question of their ability to implement good or bad methods but rather their ability to make teaching “active, alive or operational enough to create a sense of involvement for both teachers and students” ([Prabhu, p. 173](#)). Consequently, in the post-method era ([Kumaravadivelu, 2006](#)), teaching second and foreign languages centers on teachers’

and students' building of and engagement in critical relationships that allow for the interrogation and problematization of what each brings into the classroom.

The findings in this study would have benefited from classroom teacher observations to provide a perspective on the actual manifestation of the teacher knowledge base and its place in enacted practice (Ernest, 1994). Nevertheless, the findings in the study provide guidance on the priorities to be undertaken by professional development programs and inservices targeted for CATs who work with ELLs. They also establish a foundation for action research to be undertaken by CATs. Teachers can use the findings to reassess their classroom teaching in terms of its components in the learning environment that they want to create for their ELLs. The findings and the modified "Prism Model" categories can also be instrumental in eliciting student input as to the scaffolding strategies that are meaningful and purposeful to them. Such information will be essential if teachers are to recognize legitimate and necessary practices (Saye & Brush, 2002) in the classroom that are worthy of use in ELL instruction.

Acknowledgements

I wish to thank George Cheu-jei Lee for his insights on this paper. Also, I wish to thank the three coders, Daniel Craig, Erin Schmeidl and Anna Lynch. Finally, I am grateful to the anonymous reviewers for their instructive comments.

References

- Akerson, V. (2001). Teaching science when your principal says: Teach language arts. *Science and Children*, 38(7), 42–47.
- Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context. *Journal of Asynchronous Learning Networks*, 5(2), 1–17.
- Antón, M. (1999). The discourse of a learner-centred classroom. Sociocultural perspectives on teacher–learner interaction in the second language classroom. *Modern Language Journal*, 83, 303–318.
- Arhar, J. (1997). The effects of interdisciplinary teaming on teachers and students. In J. Irvin (Ed.), *What current research says to the middle level practitioner* (pp. 49–55). Columbus, OH: National Middle School Association.
- Bing, W., & Thomas, G. P. (2005). Rationale and approaches for embedding scientific literacy into the new junior secondary school chemistry curriculum in the People's Republic of China. *International Journal of Science Education*, 27(12), 1477–1493.
- Bintz, W. P., & Shelton, K. S. (2004). Using written conversation in middle school: Lessons from a teacher researcher project. *Journal of Adolescent & Adult Literacy*, 47(6), 492–507.
- Bliss, J., Askew, M., & Macrae, S. (1996). Effecting teaching and learning: Scaffolding revisited. *Oxford Review of Education*, 22(1), 37–61.
- Blumenfeld, P. C., Marx, R. W., Soloway, E., & Krajcik, J. (1996). Learning with peers: From small group cooperation to collaborative communities. *Educational Researcher*, 25(8), 37–40.
- Brush, T., & Saye, J. (2001). The use of embedded scaffolds with hypermedia-supported student-centred learning. *Journal of Educational Multimedia and Hypermedia*, 10(4), 333–356.
- Bunch, G. C., Abram, P., Lotan, R. A., & Valdes, G. (2001). Beyond sheltered instruction: Rethinking conditions for academic language development. *TESOL Journal*, 10(2–3), 28–33.
- Burns, R., Keyes, M., & Kusimo, P. (2005). *Closing achievement gaps by creating culturally responsive schools*. Charleston, WV: Edvanta.
- Buzzelli, C. A., & Johnston, B. (2002). *The moral dimensions of teaching: Language, power and culture in classroom interaction*. New York: RoutledgeFalmer.
- Case, R. E., & Taylor, S. S. (2005). Language difference or learning disability? *Clearing House*, 78(3), 127–130.
- Cazden, C. B. (2001). *Classroom discourse* (2nd ed.). Portsmouth, NJ: Heinemann.
- Conley, S., & Woosley, S. A. (2000). Teacher role stress, higher order needs, and work outcomes. *Journal of Educational Administration*, 38(2), 179–201.
- Cumming-Potvin, W., Renshaw, P., & van Kraayenoord, C. E. (2003). Scaffolding and bilingual shared readings experience: Promoting primary school students' learning and development. *Australian Journal of Language and Literacy*, 26(2), 54–68.
- de Guerrero, M., & Villamil, O. S. (2000). Activating the ZPD: Mutual scaffolding in L2 peer revision. *The Modern Language Journal*, 84, 51–68.
- Dong, Y. R. (2002). Integrating language and content: How three biology teachers work with non-English speaking students. *International Journal of Bilingual Education and Bilingualism*, 5(1), 40–57.
- Draper, R. (2002). School mathematics reform, constructivism, and literacy: A case for literacy instruction in the reform-oriented math classroom. *Journal of Adolescent & Adult Literacy*, 45(6), 520–529.
- Ernest, P. (1994). The impact of beliefs on the teaching of mathematics. In A. Bloomfield, & T. Harries (Eds.), *Teaching and learning mathematics*. Derby: Association of Teachers of Mathematics.
- Ewald, J. D. (2005). Language-related episodes in an assessment context: A 'small-group quiz'. *Canadian Modern Language Review*, 61(4), 565–586.
- Fang, Z. (2006). The language demands of science reading in middle school. *International Journal of Science Education*, 28(5), 491–520.
- Gay, G. (2002). Preparing for culturally responsive teaching. *Journal of Teacher Education*, 53(2), 106–116.
- Gee, J. P. (2000). The new literacy studies: From 'socially situated' to the work of the social. In D. Barton, M. Hamilton, & R. Ivanic (Eds.), *Situated literacies: Reading and writing in context* (pp. 180–196). New York: Routledge.

- Hammel, A. M. (2003). Using multi-modal techniques to motivate intuitive and non-intuitive students. *American Music Teacher*, 53(2), 33–34.
- Hannafin, M. J., Land, S., & Oliver, K. (1999). Open learning environments. In C. M. Reigeluth (Ed.), *Instructional design theories and models*, Vol. 2 (pp. 115–140). Mahwah, NJ: Erlbaum.
- Harper, C., & de Jong, E. (2004). Misconceptions about teaching language learners. *Journal of Adolescent & Adult Literacy*, 48(2), 152–162.
- Jewitt, C., Kress, G., Ogborn, J., & Charalampous, T. (2001). Exploring learning through visual, actional and linguistic communication: The multimodal environment of a science classroom. *Educational Review*, 53(1), 5–18.
- Kaufman, D., & Crandall, J. A. (Eds.). (2005). *Content-based instruction in elementary and secondary school settings*. Alexandria, VA: TESOL.
- Kramsch, C. (1993). *Context and culture in language teaching*. Oxford: Oxford University Press.
- Kramsch, C. (1995). The cultural component of language teaching. *Language, Culture and Curriculum*, 8, 83–92.
- Kubota, R. (1998). Voices from the margins: Second and foreign language teaching from minority perspectives. *Canadian Modern Language Review*, 54(3), 394–412.
- Kumaravadivelu, B. (2006). TESOL methods: Changing tracks, challenging trends. *TESOL Quarterly*, 40(1), 59–81.
- Ladson-Billings, G. (1994). *The dreamkeepers: Successful teachers of African-American children*. San Francisco: Jossey-Bass.
- Lee, C. D. (2001). Is October Brown Chinese? A cultural modelling activity system for underachieving students. *American Educational Research Journal*, 38(1), 97–142.
- Merrill, D. C., Reiser, B. J., Merrill, S. K., & Landes, S. (1995). *Cognition and Instruction*, 13(3), 315–372.
- Miles, M. B., & Huberman, A. M. (1984). *An expanded sourcebook: Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Mohan, B., & Beckett, G. H. (2003). A functional approach to research on content-based language learning: Recasts in causal explanations. *Modern Language Journal*, 87(3), 421–432.
- Moll, L. (1994). *Vygotsky and education: Instructional implications and applications of sociohistorical psychology*. Cambridge: Cambridge University Press.
- Nassaji, H., & Cumming, A. (2000). What's in a ZPD? A case study of a young ESL student and teacher interacting through dialogue journals. *Language Teaching Research*, 4(2), 95–121.
- National Association for Core Curriculum (2000). *A bibliography of research on the effectiveness of block-time, core, and interdisciplinary team teaching programs*. Kent, OH: National Association for Core Curriculum.
- National Centre for Educational Statistics (2002). Schools and staffing survey, 1999–2000: Overview of the data for public, private, public charter, and Bureau of Indian Affairs elementary and secondary schools. Retrieved April 14, 2006 from <<http://nces.ed.gov/pubs2002/2002313.pdf>>.
- Panell, C. (2005). *Teaching Literacy in the Technology Classroom*, 64(6), 23–25.
- Prabhu, N. (1990). There is no best method—Why? *TESOL Quarterly*, 24(2), 161–176.
- Phuntsog, N. (1999). The magic of culturally responsive pedagogy: In search of the genie's lamp in multicultural education. *Teacher Education Quarterly*, 26(3), 97–111.
- Richards, J. C. (2002). Understanding sign systems and their applications to students' literacy development. *Journal of Reading Education*, 27(3), 43–45.
- Salomon, G., & Perkins, D. N. (1998). Individual and social aspects of learning. *Review of Research in Education*, 23, 1–24.
- Saye, J. W., & Brush, T. (2002). Scaffolding critical reasoning about history and social issues in multimedia-supported learning environments. *Educational Technology Research and Development*, 50(3), 77–96.
- Shulman, L. S. (1986). Those who understand: A conception of teacher knowledge. *American Educator*, 10(1) 9–15, 43–44.
- Siegel, M. (1995). More than words: the generative power of transmediation for learning. *Canadian Journal of Education*, 20(4), 455–475.
- Snow, M. A. (1998). Trends and issues in content-based instruction. *Annual Review of Applied Linguistics*, 18, 243–267.
- Street, B. (Ed.). (2005). *Literacies across educational contexts: Mediating learning and teaching*. Philadelphia, PA: Caslon Inc.
- Thomas, W., Collier, V. (2002). *A national study of school effectiveness for language minority students' long-term academic achievement*. Santa Cruz, CA, and Washington, DC: Centre for Research on Education, Diversity & Excellence. Retrieved November 28, 2005, from <http://www.crede.ucsc.edu/research/llaa/1.1_final.html>.
- Ulanoff, S. H., & Pucci, S. L. (1999). Learning words from books: The effects of read-aloud on second language vocabulary acquisition. *Bilingual Research Journal*, 23(4), 409–422.
- US Department of Education (2006). Minority students increase participation in public education. Retrieved April 18, 2006, from <<http://www.ed.gov/about/reports/annual/2005report/1a/edlite-1a2c-minority.html>>.
- Vars, G. F. (1996). Effects of interdisciplinary curriculum and instruction. In P. S. Hlebowitsh, & W. G. Wraga (Eds.), *Annual review of research for school leaders* (pp. 147–164). Reston, VA: National Association of Secondary School Principals and Scholastic Publishing.
- Vygotsky, L. S. (1978). *Mind and society: The development of higher mental processes*. Cambridge, MA: Harvard University Press.
- Weiss, D. F. (2005/2006). Keeping it real: The rationale for using manipulatives in the middle grades. *Mathematics Teaching in the Middle School*, 11(5), 238–242.
- Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. New York: Cambridge University Press.
- Windschitl, M. (2002). Framing constructivism in practice as the negotiation of dilemmas: An analysis of the conceptual, pedagogical, cultural and political challenges facing teachers. *Review of Educational Research*, 72(2), 131–175.
- Witherell, N. (2000). Promoting understanding: Teaching literacy through the arts. *Educational Horizons*, 78(4), 179–183.